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doi: <https://doi.org/10.57709/8851623>

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SOCIAL SUPPORT AND MENTAL HEALTH AMONG HOMELESS YOUTH:  
A MULTI-GROUP SEM MODEL OF NON-LGBT\*, LGB, AND  
TRANS\* YOUTH IN METRO ATLANTA

by

MORGAN JUSTICE FUOCO

Under the Direction of Eric R. Wright, PhD

ABSTRACT

LGBT\* youth are over-represented among homeless youth and they face unique circumstances from their non-LGBT\* homeless peers, such as increased risks of psychological distress (Fredriksen-Goldsen et al. 2014). Through multi-group, structural equation modeling, I compare the effects of time homeless on mental health outcomes (e.g., psychological distress) as measured by the Kessler 6 (K6) scale mediated by social support across non-LGBT\*, LGB, and trans\* groups. Findings indicate that social support is a significant mediator between the time a youth is homeless and their mental health status, regardless of LGBT\* status. Youth who are homeless six months or longer have worse mental health and fewer social supports than youth who are homeless less than six months. Additionally, the more social support a youth has, the better their mental health is; however, individuals assigned female at birth have fewer social supports than males.

INDEX WORDS: Homeless youth, lesbian, gay, bisexual, transgender, social support, mental health, SEM

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MORGAN JUSTICE FUOCO

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

in the College of Arts and Sciences

Georgia State University

2016

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Morgan Justice Fuoco  
2016

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by

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August 2016

## **DEDICATION**

This thesis is dedicated to all of the homeless youth who shared with us their intellect, insight, and heart to make the Atlanta Youth Count and Needs Assessment successful.

## ACKNOWLEDGEMENTS

I would like to thank my Chair, Eric Wright, for his insight, guidance, and encouragement throughout this process and for inviting me to be part of the Atlanta Youth Count. I would also like to thank my committee members, Katherine Masyn and Erin Ruel, for their assistance with the analysis and theoretical framing. Finally, I would like to extend my heartfelt gratitude to my husband, JB, who spent long nights and weekends listening to my ideas, supporting me when I wanted to quit, and copy-editing each version I produced. I could not have asked for a better team.

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## 1 INTRODUCTION

Homeless youth are a large proportion of the homeless population in the United States. These youth face unique obstacles compared to their housed counterparts, such as increased risk of psychological distress resulting in poor mental health (D. Levine and Committee on Adolescence 2013). Within the homeless youth population, however, LGBT\* youth comprise a staggering 30-40% of the population (Durso and Gates 2012). LGBT\* youth often have worse mental health outcomes than their non-LGBT\* homeless counterparts because of the stigma and stressors that come with having a minority status (Rosenheck, Bassuk, and Salomon 1998). Most of the literature on homeless LGBT\* youth compare these youth to their non-LGBT\* homeless counterparts, but this thesis breaks down the category of LGBT\* into two broad categories: LGB and T\*. It is important to study LGBT\* youth as distinct populations with distinct risk factors and behaviors because it is a heterogeneous group with diverse experiences, both at the individual and structural level.

This thesis adds to and expands upon the extant body of literature on homeless youth and their mental health outcomes by using statistical analyses to compare the mediating effects of social support on mental health outcomes between three groups: LGB, T\*, and non-LGBT\* homeless youth. These contributions will aid in a better understanding of how homeless and social support function between and among these three groups. There is a dearth of literature on the specific needs and experiences of each distinct group within the LGBT\* population. While it is beyond the scope of this thesis to compare all four groups within the LGBT\* population, it is a significant contribution to compare the outcomes for trans\* youth to lesbian, gay, and bisexual youth to non-LGBT\* youth. I will use intersectionality as a theoretical framework to understand how these varied and diverse identities function together to place a group of individuals in varied

relationships to structural systems, such as mental healthcare and social support. Understanding the unique needs of LGBT\* youth will help better inform policy decisions and future research that will serve this population and help them find and maintain stable housing and mental healthcare.

There are many important definitional challenges involved in reflecting on the LGBT\* population. Current scientific, social, and political conceptualizations of LGBT\* people, however, emphasize their sexual and/or gender minority status or their generally disadvantaged and less powerful status in society. While this is central to understanding the LGBT\* experience, this emphasis overlooks some important differences that exist *within* this population. Consequently, throughout this thesis, I will refer to LGBT\* populations and/or communities in the plural. This is meant to highlight and reinforce that there is no singular, homogeneous LGBT\* homeless population, but rather a collection of communities and subpopulations that share a similar minority social position within the larger society. I will refer to trans\*gender or trans\* people using an asterisk. This is a marker commonly used within trans\* communities (and some research) to denote that the prefix “trans” is an umbrella term for many different variations and identities, including but not limited to transsexual, transgender, genderqueer, non-binary gender, etc.

## 2 LITERATURE REVIEW

### 2.1 Overview

Each year, federal and state officials develop Point-in-Time (PIT) estimates of the homeless population in the U.S. by conducting a survey of the sheltered and unsheltered homeless populations on a single night in January. The Department of Housing and Urban Development (HUD) releases an annual report, summarizing the data collected from the annual PIT counts. In 2014, the *Annual Homeless Assessment Report to Congress (AHAR)* estimated that there were 591,768 homeless people in the US. Approximately two-thirds of this population (66.7 percent) was staying in temporary residential programs while 33.3 percent of the homeless were officially “unsheltered.” About two-thirds of the homeless population were over the age of 24, 24 percent were under the age of 18, and 10 percent were between the ages of 18 and 24 years of age.

Reports on homeless children in the United States estimate that there were 194,302 homeless children and youth, accounting for about one-third of the total homeless population. Among the homeless children and youth, 70 percent (135,701) were children under the age of 18, and 30 percent (58,601) were between the ages of 18 and 24. Homeless children and youth were more likely to be part of a homeless family. Seventy-six percent of homeless youth and children were part of a homeless family. There were 45,205 unaccompanied homeless children and youth, representing about 8 percent of the total homeless population. Among unaccompanied homeless children and youth, eighty-six percent were between the ages of 18 and 24, and 14 percent were under the age of 18. Other studies also document troubling trends with regard to youth homelessness. The National Center for Family Homelessness at American Institutes for Research reports homeless data using the U.S. Department of Education’s count of homeless children in

the nation's school systems (Bassuk, DeCandia, Beach, and Berman 2014). They report that about one in every 30 children in the U.S. experienced homelessness in 2013. The estimated rate of homeless children in the U.S. increased by eight percent from 2012 to 2013 and increases were most significant in 31 states, including Georgia, and the District of Columbia.

Scientific knowledge regarding the extent and needs of unaccompanied homeless children and youth are very limited (Anthony 2014; Heerde, Scholes-Balog, and Hemphill 2015; Quilgars, Johnsen, and Pleace 2008), and practical information on the extent and needs of this population in the metro-Atlanta are non-existent. However, because homeless youth behave and access support systems differently, they often go unaccounted for in policymakers' efforts to count the homeless (Quilgars et al. 2008; Sulkowski and Joyce-Beaulieu 2014). Youth homelessness has emerged as a significant public policy concern for the City of Atlanta and the metro region because of a growing awareness of problems associated with sex trafficking (Bailey and Wade 2014; Dank et al. 2014; YouthSpark 2010), problems in our foster and child welfare systems (Zlotnick, Tam, and Zerger 2012), and youth being kicked out of their homes because they are lesbian, gay, bisexual or trans\*gender (Institute of Medicine 2011; Ray 2006). Beyond simply counting homeless and runaway youth, research on this population is limited because of the difficulties in recruiting and contacting these youth into studies.

## **2.2 Homeless Youth as a Vulnerable Population**

Research has shown that rates of sexual and physical violence, familial neglect, and suicidal behavior are higher in homeless youth than in their home-based counterparts. These challenging life scenarios are often reported to cause youth to leave home in the first place. Hyde (2005) reports that abuse and neglect are at the forefront of homeless youth's decision to leave home, with 59 percent reporting physical abuse. Other studies cite 40-75 percent of homeless

youth report experiencing physical, sexual, or emotional abuse (Ferguson 2009; Hyde 2005; Powers, Eckenrode, and Jalkitsch 1990; Tyler and Cauce 2002). Prior suicidal behaviors (e.g., deliberately trying to kill oneself or attempting suicide with the intention of drawing attention) are much higher in homeless youth than comparison groups (Robertson and Toro 1999). The 1991 Stanford Study of Homeless Families, Children, and Youth report prior suicidal behaviors in as many as 62 percent of all homeless youth (Russell 1998) and more recent reviews have reaffirmed this pioneering study's early finding (see Institute of Medicine 2011). Since homelessness can often be very challenging for youth to recover from a further understanding of these vulnerabilities that lead to homelessness is of importance.

Family dysfunction, in the form of physical abuse and neglect, has historically been shown to play an important role in homeless youth's decision to leave home. Despite the lack of recent studies, reporting has been consistent (Hyde 2005; Powers et al. 1990; Ringwalt, Greene, and Robertson 1998; Robertson, Koegel, and Ferguson 1989; Russel 1998; Tyler and Cauce 2002). Powers, Eckenrode, and Jaklitsch (1990) find that 60 percent report prior physical abuse, 42 percent report prior emotional abuse, and 21 percent report prior sexual abuse in their sample of homeless youth using New York State runaway and homeless youth programs. Tyler and Cauce (2002) find similar statistics, 50% of their Seattle based sample report physical abuse and one-third report sexual abuse. Sexual abuse had been found in 19-50 percent of homeless youth, leading to high rates of reported sexual dysfunction and confusion (Russell 1998). These forms of abuse play a significant role in causing homeless youth to decide to initially leave or not return home (Hyde 2005; Ringwalt et al. 1998; Robertson and Toro 1999).

Family violence is all too common within this population as well. Family histories of most homeless youth are troubled consisting of frequent family conflicts and disrupted home



environments (Kidd 2003). Russell (1998) cites family violence in over 19 percent of homeless youth. Most recent reports by Ferguson (2009) find that 50 percent of homeless youth report having witnessed family verbal abuse and 39 percent witnessed family physical abuse. Further, family conflict has been consistently reported as the primary reason for homelessness, with 24 percent reporting they had left home at least once because of parental alcohol abuse which caused frequent arguments or violence (Robertson and Toro 1999).

Not surprisingly, psychological distress and suicidal behavior is commonly found within homeless youth. Intake data reviewed by Russell shows that 84% of homeless youth were assessed as depressed and 18 percent reported previous suicide attempts (Russell 1998). Additionally, Martijn and Sharpe (2006) report that trauma is commonly experienced amongst homeless youth prior to homelessness (Martijn and Sharpe 2006). Of course, much of this could be due to familial conflict, neglect, and abuse experienced by the youth and not seen as a precursor to homelessness (Ryan, Kilmer, Cauce, Watanabe, and Hoyt 2000). Nonetheless, significantly higher rates of psychological distress and mental illnesses are found in homeless youth than the general population. Homeless LGBT\* adolescents show especially high rates of psychological distress and mental illness and are more likely than heterosexual adolescents to meet criteria for major depressive disorder, post-traumatic stress disorder, and conduct disorder (D. Levine and Committee on Adolescence 2013).

### **2.3 LGBT\* Homeless Youth**

LGBT\* youth are over-represented among homeless youth, comprising an estimated 30-40% of the homeless youth population in the United States (Durso and Gates 2012). They face unique circumstances from their non-LGBT\* homeless peers, such as increased risk of serious

mental illness, fewer social supports, psychological distress, and higher rates of suicidal ideation (Rice et al 2008; Keuroghlian et al. 2014).

Identifying and studying the LGBT\* sectors of the homeless youth population is important because they have unique stressors, obstacles, and needs when it comes to finding stable and safe housing. However, many researchers, policy makers, and advocates do not segment the population and instead study a general group of “homeless youth.” Rosenheck (1998) and his colleagues, however, identified several reasons that it is important to analyze the unique needs to the different subgroups of the homeless population. They argue that researchers, policy makers, and agencies need to take into account age, race, geographic location, mental health status, and gender when seeking to address the diverse needs of the homeless population. Homeless populations are non-homogenous, reflecting the wider heterogeneity of the United States demographics. Meeting the specific needs of groups allows advocates and researchers to have a more holistic and accurate view of what different people need in different contexts instead of applying a “one size fits all” solution for homelessness prevention. While these authors do not include sexuality and gender identity in their list, the same reasoning can be applied to people wishing to study or implement policy directed to LGBT\* homeless youth.

There is a dearth of empirical literature on the scope and breadth of LGBT\* youth and their unique needs. However, Keuroghlian and colleagues (2014) have identified several areas where homeless youth are at an increased risk and fall into a coverage gap among homeless shelters and outreach agencies. They did a systematic overview of the literature on homeless youth, prevention programs, and policies designed to target these youth and identified the gaps that need to be addressed by researchers, policy makers, and homeless advocates. Homeless youth are at an increased risk compared to their housed counterparts for poorer mental health and

are often left without services, which they can utilize to meet their needs like basic counseling or the ability to acquire medications. Additionally, LGBT\* youth are at an increased risk of violent victimization because of their sexual or gender minority status (Keuroghlian et al 2014).

All of these increased risks are even higher for trans\*gender youth, who are understudied yet overrepresented within the homeless LGBT\* population (Yu 2010, D. Levine and Committee on Adolescence 2013). Trans\* homeless youth represent 11% of the LGBT\* homeless youth population in one New York transitional housing program (Yu 2010). Yu asserts that trans\* youth are the most vulnerable of the LGBT\* homeless population as their stigma and risk factors are much higher compared to other LGB homeless youth. Trans\* youth often face barriers in accessing their most basic needs such as shelter and often face social isolation resulting in fewer social support systems. Trans\*gender homeless youth require more specific services such as mental health treatment along with educational and vocational support. Shelters may not allow trans\* youth to stay there or may make them sleep or shower in areas based on their birth sex, but not with the gender with which they identify. This can lead to additional victimization within the facilities if they are allowed in at all and result in serious negative mental health outcomes (Yu 2010).

LGBT\* people in general are at greater risk for negative mental health outcomes than their non-LGBT\* counterparts (Berg et al. 2008, Birkett 2014, Kelly et al. 2015, Fredriksen-Goldsen et al. 2014, Dam 2014). While there is little literature about the extent and needs of LGBT\* homeless youth, the literature that is available suggests that LGBT\* homeless youth are also at an increased risk for psychological distress compared to their non-LGBT\* homeless peers (D. Levine and Committee on Adolescence 2013). Evidence also suggests that LGBT\* youth are a particularly vulnerable population because of their lack of social supports, especially when

compared to non-LGBT\* homeless youth (Rice et al 2008). Meyer's (2003) minority stress model indicates that identifying as LGB moderates the psychological distress and there is some evidence (Budge et al. 2014) that trans\* men and women benefit from social support systems. However, these groups still have been found to have fewer social supports than their non-LGBT counterparts (Budge et al. 2014).

*Hypothesis I. Trans\* youth have fewer social supports and worse mental health than LGB and non-LGBT\* youth; and, LGB youth have fewer social supports and worse mental health than non-LGBT\* youth.*

## **2.4 LGBT\* Homeless Youth and Mental Health**

Population-based surveys indicate that LGB people are at greater risk for higher rates of depression, anxiety, mood, panic, and suicidal symptoms and ideation among people identifying as LGB and disclosing same-sex behavior. The most prevalent problems were depression and anxiety, followed by bipolar symptoms, mood swings, and suicidal ideation (Berg et al. 2008).

Among LGBT\* youth, some studies suggest that psychological distress and victimization decrease with age (Birkett 2014). As youth enter young adulthood, they experience less psychological distress and victimization. However, a study of Australian LGBT\* youth indicates that compared to their non-LGBT\* counterparts in the general population, psychological distress was more prevalent in LGBT\* youth, regardless of age in adolescence. Specifically, those youth who were "gender diverse" reported considerably higher rates of psychological distress (Kelly et al 2015). Similarly, among trans\*gender individuals recent studies with national samples reported that rates of depression, anxiety, and more broadly, psychological distress were higher for this population than for non-trans\*gender men and women (Fredriksen-Goldsen et al. 2014).

Consistent with most literature on LGBT\* mental health, differences between categories and within categories are not considered as often as LGB, and less often the “T\*”, is as a whole. However, there are a few studies that break down categories of sexuality and gender by race, SES, or other sociocultural components. For example, one study analyzed mental health outcomes by race and found that Black and Latino LGB individuals may be at an elevated risk for suicide ideation compared to their White counterparts. However, there was not significant evidence that race played an important role in increased risk of depression (O’Donnell 2011).

LGBT\* homeless youth are at an increased risk of suffering from mental health issues, such as psychological distress compared to their non-LGBT\* homeless peers (D. Levine and Committee on Adolescence 2013). It is important to understand the extent of these differences both between LGBT\* and non-LGBT\* homeless youth and among LGBT\* youth themselves. Existing research has shown that trans\* youth are at an even more increased risk for mental health issues and other risk factors (e.g., finding shelters that are safe, see Yu 2010). One way to examine the depth and breadth of mental health issues among this population is to use existing scales that measure mental health outcomes, such as the Kessler 6, or K6, scale.

Much of the literature available provides evidence that the K6 is a reliable predictor of serious mental illness in the adult population (Green et al. 2010; Khan 2014). There is not much literature on the reliability of the K6 among youth populations; however, the literature available provides conflicting results on how well the K6 can predict serious mental illness (SMI) in adolescents (Green et al. 2010). My goal in this thesis is not to categorize respondents into one of two categories, SMI or non-SMI. My goal with this thesis is to treat mental health, and consequently mental illness, on a continuum with no distinct cut point for an interchange between the two. Consistent with sociological theory and literature, mental illness is a multi-

faceted concept (Horowitz 2007) and individuals may fall at any point along the continuum. By dichotomizing mental illness into a clinical definition of presence or absence of disorder, we miss a significant portion of the population who has significant evidence of psychological distress, but may not meet the cut point. In order to understand the homeless youth population and, ultimately, be able to provide data to support policy to better serve the needs of these youth, we must have an accurate picture of the diverse needs and experiences of the youth.

*Hypothesis II. The longer a person has been homeless, the worse their mental health will be. This effect will be greater for T\* youth than for LGB and non-LGBT\* youth and greater for LGB youth than for non-LGBT\* youth.*

## **2.5 Social Support**

Social support can take many different forms, from direct contact or received support, from support systems (e.g., family, friends, and adults to perceived support about the likelihood supporters will provide support during times of need (Gurung 2006). Social support theory also posits that there are two distinct types of support: structural and functional (Wills 1998). For the purposes of this thesis, I use the structural support conceptualization because the data do not have information about functional support. Structural support describes the extent that a youth is imbedded within a social support system (Wills 1991). This is often measured by how many supportive network ties a person has.

Social support networks have emerged in recent literature as an important mediator in risky behaviors and mental health for homeless youth. Stronger social support is associated with better mental health outcomes and fewer risky behaviors (Rice et al. 2008; Bao et al. 2000; Martino et al. 2011). However, there are several key factors that affect these outcomes. For example, a study of 696 homeless youth found that older youth and youth who had been

homeless for a longer period of time were less likely to have positive and strong social support networks than younger youth and youth who had been homeless for a shorter amount of time (Rice et al 2008). This led to higher risk behaviors, such as risky sex and lower mental health. Rice and colleagues (2008) also found that non-LGBT\* youth were more likely to have positive strong social support networks compared to their non-LGBT\* peers.

In another large sample of homeless youth (N = 602), social support networks were found to reduce depression and associations with deviant peers, which often leads to risky behaviors (Bao et al 2000). My hypothesis regarding social support is that it will function similarly to what the extant literature shows.

*Hypothesis III. Social support partially mediates the relationship between duration of homelessness and mental health outcomes. The effect is stronger for T\* youth compared to LGB youth and stronger for LGB youth compared to non-LGBT\* youth. Additionally, the longer the youth have been homeless, the fewer social supports they have.*

## **2.6 Intersectionality**

Like many scholars, I further acknowledge that any single label or social identity has inherent limitations for understanding an individual's life chances without simultaneously considering other intersecting social statuses. In this regard, I embrace using an intersectional approach to understanding homeless LGBT\* youths' lives through the theory of intersectionality. The theory of intersectionality (Crenshaw 1989) was developed as a way to understand how race, class, and gender shape a person or groups of people's relationship with institutional structures, such as those that leave youth homeless and their subsequent mental health outcomes. This theory provides a framework for understanding the social position of an individual relative to their race, class, gender, and, in modern research, sexuality (Collins 2001).

Crenshaw (1989, 1991) argued for the development of a theory that would make diverse and intersecting identities the center of the research. By and large, intersectionality has been applied to qualitative research through in-depth interviewing where interviewers can ask about the complexities of experiences as they relate to the gender, age, race, class, and sexuality of the respondent (Seng et al. 2006). Some feminist researchers have debated the integrity of quantitative modeling of intersectionality, citing that it is difficult to truly understand the nuanced relationships that result from various simultaneous identities and their position to a broader system with survey data (Reinharz 1992). However, quantitative feminist researchers have rebutted this argument by arguing that quantitative modeling allows for a more sophisticated application and statistical snapshot of the relationships social identities have with each other and larger institutional systems (Steinbugler, Press, and Dias 2006; Spierings 2012; Seng, Lopez, Sperlich, Hamama, and Meldrum 2012).

My thesis draws on intersectionality to help understand and make sense of homeless youths' experiences with mental health and social support. My SEM model consists of three groups, LGB, T\*, and non-LGBT\*, which alone underscores Crenshaw and Collin's arguments for the need to study diverse identities individually. Additionally, I use age, race, and gender as covariates in my model. I analyze age, race, and gender within the context of sexuality and trans\*gender identities. That is, if and how age, race, and gender function differently for people who are LGB, T\*, and non-LGBT\* regarding their relationship to how long they are homeless, how strong their social support is, and what their mental health outcomes are.

Using intersectionality as a theoretical framework allows me to analyze multiple identities and their relationships with broader systems, like mental health and social support systems, simultaneously to understand how different people may have different outcomes.



Therefore, I analyze how various identities of race, gender, and sexuality work together within the three groups of LGB, T\*, and non-LGBT\* homeless youth to gain a more holistic understanding of how social support and duration of homelessness impact mental health. With this theory, I analyze LGB, T\*, and non-LGBT\* homeless youth separately to determine how my chosen model of duration of homelessness and social support impacts mental health outcomes based on one's relative position to a given normative culture (e.g., heteronormative and White norms). For example, a white cisgender lesbian who has been homeless for 2 months and is well-networked may have better mental health outcomes than a black gay trans\*gender woman whose been homeless intermittently for the last 10 years of her life with fewer social support networks.

Feminist quantitative researchers have called for the application of intersectionality in quantitative modeling in order to have a better understanding of the importance of overlapping identities in shaping relationships to broader systems, specifically to mental health and social support networks (Seng et al. 2012; Harding 1991). It is my goal with this thesis to add to this body of literature and expand the application of intersectional theory in order to better understand homeless youths' unique relationship to social support and mental health.

*Hypothesis IV. Race and gender moderate the effects of duration of homelessness on mental health outcomes and social support. Race and gender also moderate the effect of social support on mental health outcomes. That is, youth of color and women are be more likely to have poorer mental health outcomes based on their duration of homelessness. Youth of color and women are more likely to have fewer social supports the longer they are homeless than white men. Also, the effect of social support on mental health outcomes are greater for youth of color and women than for white men.*

## 2.7 Critical Gaps

Much of the literature presented provides offer important insights but also highlight areas for further research. However, there are several key areas that are missing. One key area is the need for researchers to study homeless LGBT\* youth as distinct categories. It is important to understand the complexity of identity in order to provide a realistic overview of the lived experiences of youth in these categories. With this thesis, I aim to address this by analyzing LGB and T\* youth as distinct categories along with their non-LGBT\* counterparts. However, it is beyond the scope of this thesis to analyze these youth beyond their self-described identity. Future research should strive to do a wholesome analysis of youth with regard to their attraction and behavior as well.

Most of the existing literature on social support networks utilizes some variation of structural equation modeling, such as path modeling. However, they do not describe using a multiple group framework to make comparisons between groups. Most of them use sexuality and/or gender identity as a covariate compared to evaluating a model in each group. This thesis builds on the current models by introducing a multiple group model that allows for more information to be derived (i.e., more parameters can be estimated in multiple group context) compared to the extant SEM models.

There is a dearth of literature available on homeless youth that utilize the K6 scale. In order to fully understand how well this scale functions in various populations, it is important to invest time in understanding the outcomes when it is used. Through multiple group SEM, it is my goal with this thesis to use the K6 scale to tap into the underlying dimensions of mental health in LGB, T\*, and non-LGBT\* homeless youth populations by using the K6 scale to construct a latent variable measuring mental health.

Finally, this thesis addresses the critical gap within the literature that fails to understand the relationships between the time a youth is homeless, their social support systems, and their mental health outcomes. It is important to understand how social supports operate for homeless youth in order to better understand their mental health outcomes and the factors that predict it.

### **3 RESEARCH DESIGN**

This thesis investigates the differential effects of duration of homelessness, age, gender, and race have on psychological distress mediated by social support. The data for this thesis were collected using anonymous surveys administered to homeless youth in the metro-Atlanta area (Atlanta Homeless Youth Count Final Report 2016). A capture-recapture methodology was implemented to determine the size of the population, a methodology used to estimate the size of hidden populations. My analysis utilizes multi-group SEM modeling to estimate the relationships among my key variables.

#### **3.1 Data**

The data that my analysis uses are from a sample of homeless youth in the metro-Atlanta area collected during the summer of 2015. These data are adequate to answer my research question, as there is a significant portion (i.e., consistent with other estimates) of the sample that is LGBT\* and the concepts of psychological distress and social support were operationalized in the survey instrument. These data were collected by trained students and volunteers who were led by community organizers in the field. The community organizers acted as gate-keepers to the homeless youth because many of the youth already knew these outreach workers and trusted them. This allowed the field researchers to gain rapport with the homeless youth, which, in most cases, induced trust.

The survey instrument was designed to be administered by trained student survey researchers. It reflected a wide range of questions regarding the youth's history of homelessness and basic demographic characteristics. In addition, the survey was designed to collect data on a limited range of social and health-related problems believed to be highly prevalent in this population.

Youth were eligible for the study if they met certain inclusion criteria, such as they did not have a permanent stable residence of their own; youth were between the ages of 14 and 25; and youth were living independently without consistent parental or familial support. These criteria were assessed using a screener at the beginning of the survey. If youth did not meet at least one of the above criteria, they were not eligible for the study. In addition, if the youth were excluded from the study if the youth was incapable of comprehending the consent form because of cognitive limitations or if they were noticeably under the influence of drugs or alcohol.

At the conclusion of the interview, youth who completed the basic survey were given \$10 in a VISA gift card as well as resource information about agencies that provide health and/or social services for homeless youth. Youth who completed the survey online were given a code for \$10 in Amazon.com credit.

### **3.2 Sampling**

One of the main goals of any survey sampling technique is to be able to generalize survey findings to a larger population, or universe, of individuals. Traditional random sampling methods are ideal, but they require a sampling frame where all individuals in the universe have a known probability of being included in the sample.

In hidden and hard-to-reach survey populations, however, we rarely know the probability that any individual will be included in the study through a given sampling design. Therefore, the original data were collected using capture-recapture methodology.

Because capture-recapture relies on capturing the same respondent multiple times throughout the survey period, the original dataset contained duplicate cases. Although crucial for population estimation, using this raw dataset violates key assumptions of my estimation technique, such as the assumption of independent observations. Therefore, I use a data file that has had the duplicate cases removed to do my analysis. In order to arrive at this “de-duped” dataset, researchers created a survey identifier that ensured the anonymity of the participant, but is extremely unlikely to occur multiple times within the dataset. This duplicate identifier was created by combining non-identifying descriptive variables such as a participant’s age (A1), last initial (Q3), day of birth (Q4), birth city (Q5), along with the subjects self-reported gender identity (Q6-7) and race/ethnicity (Q8-9) to create a value that enabled the researchers to identify potential duplicate survey respondents and therefore have a dataset that is useful for analyses beyond simply calculating the population estimation. The final dataset contains 694 individual cases.

### **3.3 Measurement**

Figure 3.1 represents the measurement model used in this thesis. I investigated the differential effects duration of homelessness has on psychological distress mediated by social support within three groups: lesbian, gay, and bisexual youth (LGB; N = 144); trans\*gender youth (trans\*gender; N = 45); and heterosexual cisgender youth (non-LGBT\*; N = 494). Age, sex at birth, and race are included in the model as covariates, but age will be held constant while gender and race are allowed to vary across the groups. There are 11 cases that are missing for

LGBT\* status; yielding a total of 683 cases. There are an additional 26 cases missing on one or more of the covariates yielding my analysis sample size to be 657.

Lesbian, gay, and bisexual are measured as self-identity concepts that were assessed using a question that asked the respondent to choose which sexuality identity label best described them. If a respondent chose lesbian, gay, or bisexual, they were included in this measurement. Trans\*gender is measured also as a self-identity, but includes categories such as genderqueer, non-binary, and part-time in both genders. Cisgender and heterosexual are measured separately. Cisgender includes people whose birth sex and current gender identity are congruent with societal norms (e.g., birth sex is female and gender identity is woman). Heterosexual includes people who self-identify as only heterosexual (See Appendix A). If an individual identified as trans\*gender, regardless of sexual orientation, they were included in the trans\* group and not in the non-LGBT\* or LGB group.

Sexuality and, increasingly, gender identity are multifaceted concepts with many dimensions. They can be defined using self-identity, behavior, and/or attraction. Many researchers and methodologists argue for broader definitions of these categories beyond self-identity, which is the primary method used to measure them. Especially in public health related research, it is important to capture the largest population as possible that is at risk for a given disease to be able to understand the needs and extent of the population. For example, national surveys should expand their analysis of HIV-related risk groups to include not only people who identify as LGB, but also to include questions that ask about behavior and include those people who may not identify as LGB but act in accordance with behaviors that put them at an increased risk of HIV transmission. While I support this effort and intend to strive for this benchmark in

my future research, the level of analysis this requires is beyond the scope and timeframe of this thesis. For the purposes of this thesis, I only utilize self-identity measures.

Next, I will discuss the two latent variables and one observed independent variable in my model: time homelessness, social support, and mental health. Time Homeless (TH) is an observed dichotomous variable that is comprised of youth who have been homeless more than six months and youth who have been homeless less than six months. Originally, this variable was an ordinal variable with five categories ranging from less than one month to one year or more. Ultimately, I empirically investigated time homeless as it related to social support and mental health and dichotomized it in youth who had been homeless six months or more and youth who have been homeless less than six months.

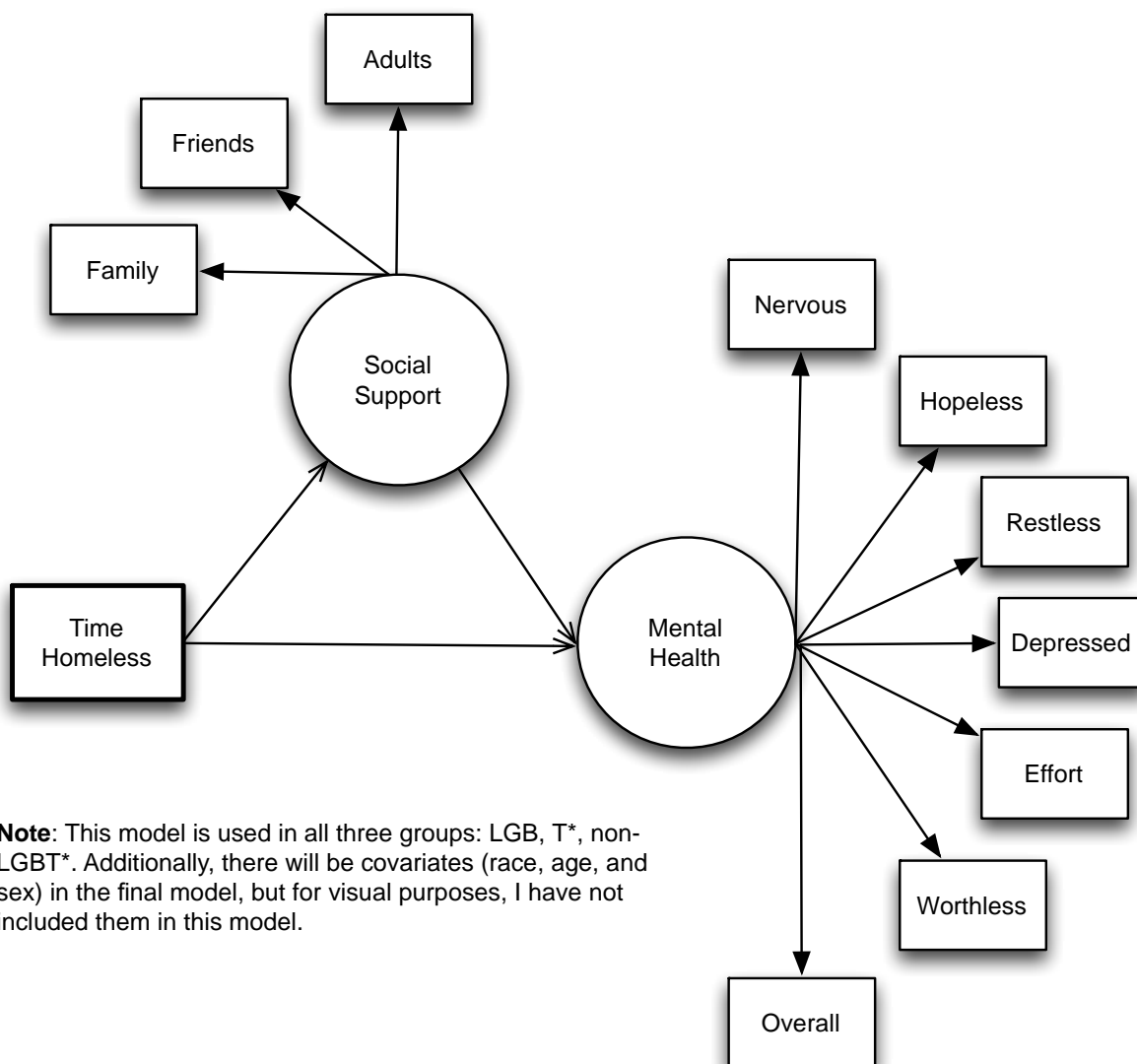
Social Support (SS) is a latent variable with three indicators: how many family members the respondent has to talk to about important issues (Family), how many friends their age the respondent has to talk about important issues (Friends), how many adult friends (over 25) the respondent has to talk about important issues (Adults). This combination of indicators will assess the magnitude and strength of the respondent's social support. The indicators are coded as ordinal with three response categories: none, one to three, and four or more.

Mental health (MH) is a latent variable with 7 indicators, which are comprised of a collapsed version of a 6 item scale called the Kessler 6 (Kessler et al. 2003) and a subsequent question assessing how much the respondent's feelings interfere with their daily life. The K6 is intended to measure psychological distress and the subsequent question assesses overall mental health as related to the K6. The K6 scale as designed was used in the U.S. National Health Interview Survey in order to determine cases of serious mental illness in a given population. In order to determine a threshold for psychological distress, each item of the K6 is given a score

range of 0-4 with 4 being the most severe, and then summing the scores of the six items. A score of 13 or higher indicates prevalence of a serious mental illness ([http://www.hcp.med.harvard.edu/ncs/k6\\_scales.php](http://www.hcp.med.harvard.edu/ncs/k6_scales.php)). For the purposes of this thesis, I use each item separately instead of dichotomizing into respondents who have a SMI ( $K6 > 13$ ) and respondents who do not ( $K6 < 13$ ). Consistent with other theorists in public health and sociology (Horowitz 2007), this thesis assesses mental health on a continuum instead of discrete categories. It is my goal to understand the range and nuances of mental health outcomes among homeless youth and how these vary across sexuality and gender categories. Also, because my sample size for at least one group is small, it will be difficult to find statistical or substantive meaning if I dichotomize the items. Therefore, I leave the six indicators as a scale ranging from one (all of the time) to five (none of the time) and the overall mental health variable is also a scale of one (a lot) to four (not at all).

Finally, race, sex assigned at birth, and age are observed variables that are self-identity measures. These variables are derived from questions that we directly asked the respondent to choose how old they are, what race(s) they identified with, and what their sex they were assigned at birth. Age is a continuous variable ranging from 15 to 25. Race is coded as a dummy variable where White and Other are coded as zero and Black is coded as one. Sex assigned at birth is also a dummy variable where Male is the reference category and Female is the analysis category.





*Figure 3.1 SEM model for the effects of time homeless on mental health partially mediated by social support*

#### 4 ANALYSIS

To test my hypotheses, I used a multiple group SEM model for my analysis. The three groups included in my model are non-LGBT\*, LGB, and Trans\* (T\*). The total sample size for the analysis is 657 and the non-LGBT\* group comprises 72.3% (N=457), the LGB group comprises 21.5% (N=141), and the trans\* group comprises 6.2% (41) of the overall sample. There were 11 missing on LGBT\* status and another 26 missing on one or more covariates.

I used SPSS to analyze the data descriptively and for univariate normality. I used Mplus to estimate and build my final model. Ultimately, I used Bayesian estimation with non-informative priors because there is no existing information on the probable distribution of any of the parameters in my model. Bayesian estimation was the most appropriate for my sample because it does not require large sample sizes to reach asymptotically equivalent estimates and, most importantly, to yield valid inferences (van de Schoot 2014). I have a particularly small sample size for the trans\* group (N=41), which would make estimation and inference under WSMV unreliable.

## 5 RESULTS

### 5.1 Descriptives

To begin my analysis, I used SPSS to transform any variables necessary and to evaluate their multivariate normality by assessing the univariate and bivariate distributions of all of my variables. All variables were normally distributed and had adequate cell sizes to move forward.

Table 5.1 shows the descriptive statistics and chi-square for each of my variables in my overall model. On average, trans\* youth are homeless three to six months compared to two to three months for LGB and non-LGBT youth. Forty-nine percent of trans\* youth reported having no family members they could talk to compared to 41% of LGB and 38% of non-LGBT\* youth. However, 29% of trans\* youth reported having four or more adults that they could talk to compared to 24% of LGB and 25% of non-LGBT\* youth. Additionally, 39.5% of trans\* youth met criteria for serious mental illness compared to 28.3% of LGB and 28.3% of non-LGBT\* youth. Trans\* youth also had worse mental health scores across all of the K6 indicators. However, LGB youth had the same or better mental health on several of the K6 indicators including overall mental health, feeling like everything is an effort, and depression compared to non-LGBT\* youth.

*Table 5.1. Descriptive Statistics of Variables Used in Model*

	Overall		Non-LGBT*		LGB		Trans*		$\chi^2$
	%	Mean	%	Mean	%	Mean	%	Mean	
Time Homeless		3.7		3.7		3.6		4.0	13.0
<1 month	18.2		18.2		18.2		15.9		
1-2 months	16.5		17.8		16.1		6.8		
2-3 months	10.4		9.8		11.9		13.6		
3-6 months	15.2		12.7		21.0		20.5		
6 months - 1 year	15.1		16.4		11.2		13.6		
1 year or more	24.6		25.2		21.7		29.5		
Social Support									
Family		0.8		0.8		0.7		0.6	5.0
None	39.8		37.9		41.4		48.8		

	1-3	43.9		44.1		46.4		41.5	
	4+	16.2		18.0		12.1		9.8	
Friends			0.9		0.8		1.0		0.9
	None	34.7		37.7		26.4		29.3	
	1-3	44.2		41.9		50		51.2	
	4+	21.1		20.3		23.6		19.5	
Adults			0.9		0.8		0.9		1.0
	None	39.6		41.6		33.6		34.1	
	1-3	35.4		33.3		42.9		36.6	
	4+	25.0		25.1		23.6		29.3	
Mental Health									
	SMI			28.3		28.3		39.5	
Nervous			3.3		3.3		3.3		3
	All of the time	14.3		13.3		15		23.3	
	Most of the time	12.5		13.7		8.6		11.6	
	Some of the time	29.9		29.5		33.6		23.3	
	A little of the time	15.6		14.3		17.1		25.6	
	None of the time	27.8		29.3		25.7		16.3	
Hopeless			3.6		3.7		3.5		3.6
	All of the time	10.4		9.5		11.4		16.3	
	Most of the time	12.0		12.7		12.1		4.7	
	Some of the time	23.8		22.6		27.1		25.6	
	A little of the time	11.6		12.2		10.7		9.3	
	None of the time	42.2		42.9		38.6		44.2	
Restless			3.3		3.3		3.2		2.8
	All of the time	16.5		15.6		15.6		25.6	
	Most of the time	14.3		14.2		15.6		11.6	
	Some of the time	26.5		25.2		28.4		34.9	
	A little of the time	11.3		11.3		11.3		14.0	
	None of the time	31.4		33.8		29.1		14.0	
Depressed			3.7		3.7		3.7		3.1
	All of the time	10.2		9.5		9.2		20.9	
	Most of the time	11.0		11.2		9.9		14	
	Some of the time	23.6		22.4		26.2		27.9	
	A little of the time	14.4		15.1		13.5		9.3	
	None of the time	40.8		41.7		41.1		27.9	
Everything Effort			3.0		3.0		3.2		2.8
	All of the time	23.9		25.4		17.7		27.9	
	Most of the time	14.3		14.1		15.6		11.6	
	Some of the time	25.6		25.2		26.2		27.9	
	A little of the time	9.4		8.9		8.5		16.3	
	None of the time	26.9		26.4		31.9		16.3	
Worthless			4.0		4.1		3.9		3.5
	All of the time	7.4		6.9		7.8		11.6	
	Most of the time	6.7		6.2		7.1		9.3	
	Some of the time	18		15.8		20.6		32.6	

A little of the time	12.2	12.5	12.8	9.3		
None of the time	55.7	58.6	51.8	37.2		
Overall MH		2.4	2.4	2.4	2.3	7.6
A lot	25.7	26.6	21.7	27.5		
Some	27.8	25	36.4	32.5		
A little	25.4	27	22.5	20.0		
Not at all	21.1	21.4	19.4	20.0		
Sex						37.5
Female	33.6	30.5	52.8	9.1		
Male	66.4	69.5	47.2	90.9		
Race						19.6
Black	69.9	73.3	66.7	53.3		
White	5.3	4.7	9.0	0		
Other	24.7	22.1	24.3	46.7		
Age		21.5	21.5	21.4	21.5	24.4

## 5.2 Establishing Measurement Models for Latent Variables

Next, I established a CFA for both of my latent variables, social support and mental health. For social support, I started with a measurement model that included five indicators: relationship, squad, family, friends, and adults. Overall, this model fit well (chi-square = 8.761; RMSEA = 0.034; CFI = 0.991;). However, the  $R^2$  values for relationship and squad were very low (squad: 0.038; relationship: 0.006). Additionally, the factor loading for relationship was low (est: 0.111) compared to the other indicators and non-significant ( $p=0.226$ ). While the point estimate between squad and the underlying latent factor was significant (est: 0.194,  $p<.001$ ), the estimate was very low compared to the rest of the point estimates for family, friends, and adults. Empirically, these findings are also supported by composition of the questions asked in the survey. Family, friends, and adults were clustered and asked together under an overall question about social support. Squad and relationship status were asked later in the survey. Based on this information, I trimmed the model to only include family, friends, and adults as indicators for the social support factor. The final CFA for social support is a just-identified measurement model and the overall fit is perfect. I was able to establish partial scalar invariance by freeing the two

thresholds for *family* in the non-LGBT group. This model was not statistically significantly worse fitting than the metric or configural models (See Table 5.2) and therefore my final measurement model for social support across all three groups.

*Table 5.2 Measurement Invariance Model Comparison: Social Support*

Model	Model	npar	Chi-square	df	p-value	CFI	RMSEA	90% CI	Comparison	DiffTest	df	p-value
1	Configural	27	0	0	0	1	0	0				
2	Metric	23	2.069	4	0.723	1	0	[0.000, 0.074]	M2 vs. M1	2.069	4	0.723
3	Scalar	13	20.911	14	0.010	0.982	0.048	[0.000, 0.087]	M3 vs. M2	19.016	10	0.040
									M3 vs. M1	20.911	14	0.104
4	Partial Scalar	15	7.842	12	0.797	1	0	[0.000, 0.045]	M4 vs. M2	5.728	8	0.678
									M4 vs. M1	7.842	12	0.797

For mental health, I began with a measurement model that included seven indicators for the mental health factor. This model fit relatively well (chi-square = 93.838; RMSEA = 0.092; CFI = 0.9874). All indicators were significant ( $p < .001$ ), with the exception of the first because it was fixed. All  $R^2$ 's indicated that the indicators adequately describe the underlying factor. The modification indices indicated that I should specify a covariance between *q34a* with *q34c* (MI: 43.359). Doing so improved the overall fit (chi-square = 51.929; RMSEA = 0.067; CFI = 0.987) and the  $R^2$  values. For this model, the modification indices indicated I should specify a covariance between *q34e* with *q34c* (MI: 19.210). Theoretically, specifying a covariance between these indicators made sense because it is likely that being nervous, restless, and feeling like everything is an effort are measuring similar concepts. My final CFA model for mental health included the two covariances and seven indicators. The overall fit was improved from the previous models (chi-square = 33.466; RMSEA = 0.051; CFI = 0.993). The modification indices did not indicate that I should specify any other parameters within my model. The residuals for all

indicators were negligible ( $<|1|$ ). This model had full scalar invariance and was not statistically significantly worse fitting than the configural or metric models (See Table 5.3).

*Table 5.3 Measurement Invariance Model Comparison: Mental Health*

Model	Model	npar	Chi-square	df	p-value	CFI	RMSEA	90% CI	Comparison	DiffTest	df	p-value
1	Configural	108	51.765	36	0.043	0.995	0.044	0.008 0.070				
2	Metric	96	56.741	48	0.181	0.997	0.029	0.000 0.055	M2 vs. M1	11.305	12	0.503
3	Scalar	44	115.604	100	0.136	0.995	0.026	0.000 0.046	M3 vs. M2	60.047	52	0.207
									M3 vs. M1	69.932	64	0.285

Next, I brought the factors together to allow them to freely covary. Table 5.3 shows the results from the measurement invariance testing. First I established configural and then metric invariance. As the table shows, I was able to carry over the measurement invariance I achieved from both of my measurement models for mental health and social support. The partial scalar model does fit slightly statistically significantly worse than the configural model (DiffTest=103.706,  $p=0.0386$ ). However, the final model with partial scalar invariance does not fit statistically significantly worse than the metric model (DiffTest=5.175,  $p=0.0752$ ). Overall, the fit indices indicate a well-fitting model (chi-square = 208.864; RMSEA = 0.030; CFI = 0.988; See Table 5.3).

*Table 5.4 Measurement Invariance Model Comparison: Social Support and Mental Health*

Model	Model	npar	Chi-square	df	p-value	CFI	RMSEA	90% CI	Comparison	DiffTest	df	p-value
1	Configural	141	104.463	93	0.196	0.996	0.024	[0.000, 0.044]				
2	Partial Scalar	63	193.963	171	0.110	0.993	0.025	[0.000, 0.040]	M2 vs. M1	91.455	78	0.1415

### 5.3 Trimming Time Homeless Variable

Next, I incorporated Time Homeless into each model for social support and mental health separately. My initial Time Homeless variable had 5 categories for time, ranging from less than one month to over one year. To begin, I used a Wald test of parameter constraints to determine if the effects of time homeless on social support and mental health were different across groups and found there is no evidence of difference (Social Support: Wald= 4.931; DF=10; p=0.896; Mental Health=6.402; DF=10; p=0.7805). Table 1 chi-square statistics also indicate that overall there is no association between LGBT\* status and time homeless. There is some evidence that the chi-square association between LGB and non-LGBT\* status with the dummy variable, *three to six months* is significant (see Table 5.1), but the multi-parameter Wald test does not indicate an overall association. With all five dummy variables, there was no evidence of an overall association between social support or mental health and time homeless (Social Support: Wald= 9.481; DF=5; p=0.091; Mental Health: Wald=6.804; DF=5; p=0.2356), but there was evidence that youth who had been homeless over six months was the threshold for significance ( $p \leq 0.05$ ). From there, I trimmed my model to only include two time dummy variables by collapsing categories, one for six months to one year and one for more than a year. There was evidence of an overall association with social support for these two variables (Social Support: Wald= 9.038; DF=2;  $p < 0.05$ ), but no evidence that the effects between the two variables were different ( $p = 0.530$ ). There was no evidence of overall effect with mental health ( $p = 0.0822$ ), but there was also no evidence that the two effects were different from each other ( $p = 0.683$ ). This allowed me to collapse the time categories into one dummy variable for those youth who had been homeless more than six months. There was an overall association between the collapsed time variable, *sixplus*, and social support and mental health (Social Support: Wald=8.762; DF=1;  $p < .01$ ; Mental



Health: Wald=4.743; DF=1;  $p < .05$ ). There was no evidence of an interaction between LGBT\* status and social support or mental health when controlling for time homeless (Social Support: Wald=1.165; DF=2;  $p = 0.559$ ; Mental Health: Wald=5.177; DF=2;  $p = 0.075$ ). There was also no evidence of difference in average social support for non-LGBT\* versus LGB versus T\* ( $p > 0.05$ ). There was some evidence of difference that on average mental health is better for non-LGBT\* youth (est.=0.554) and LGB youth (0.452) compared to trans\* youth ( $p \leq 0.05$ ); however, there was no evidence of an overall interaction between LGBT\* status and time homeless controlling for mental health. On average social support and mental health are lower for those youth who are homeless more than six months compared to those who have been homeless less than six months, adjusting for LGBT\* status (Social Support: est.=-0.378;  $p < .05$ ; Mental Health: est.=-0.191;  $p < 0.05$ ).

#### **5.4 Final Model**

Finally, the last step in building my model was adding the covariates of race, sex assigned at birth, and age. I estimated this model both under WLSMV and Bayes. First, I allowed the effects of the covariates to vary across LGBT\* status in order to determine if there was an interaction effect. There is no evidence of an interaction effect between LGBT\* status and any of the covariates (Wald=13.341; DF=12;  $p = 0.3448$ ). There is some evidence that there is a difference between non-LGBT\* youth (est.=1.459; C.I.=[0.129, 3.009]) and LGB youth (est.=1.601; C.I.=[0.201, 3.146]) compared to trans\* youth for the effect of sex assigned at birth on social support; however, the overall test of association indicates that there is not an interaction effect.

Table 5.5 shows the results from my final model estimated under Bayesian estimation procedures. The overall model fits well with  $ppp = 0.192$ ,  $KS = 0.01$  (non-significant),  $psr = 1.068$

with 150,000 iterations, thinning at 20, and 4 chains. Although the posterior predictive p-value is low ( $ppp=0.192$ ), the model indicates good overall fit under WLSMV (chi-square = 307.419; RMSEA = 0.020; CFI = 0.992). Figure 5.1 shows an example of the trace plots that indicates a well-converged model. All parameters look almost identical to this which indicates a well-converged model. Figure 5.2 shows an example of the posterior kernel density plot from a well-converged model.

The effect of social support on mental health is statistically significant across LGBT\* status (est.=0.184; SD=0.060; C.I. [0.074, 0.310]) when controlling for other variables. On average, higher levels of social support correspond to better mental health. As noted earlier, time homeless does not have a statistically significant direct effect on mental health outcomes. Mental health is also not statistically significantly related to race, age, or gender. Additionally, across LGBT\* status, youth who have been homeless more than six months have lower levels of social support than youth who have been homeless less than six months (est.=-0.218; SD=0.100; C.I. [-0.421, -0.028]). This relationship is statistically significant. Finally, across LGBT\* status, on average, those individuals who were assigned female at birth (AFAB) have statistically significantly lower levels of social support than those assigned male at birth (AMAB) when controlling for other variables (est.=-0.337; SD=0.101; C.I. [-0.421, -0.028]).

The average level of mental health and social support are not statistically significantly different across LGBT\* status. However, descriptively, on average mental health is better among LGB youth compared to non-LGBT\* youth (0.072) and social support is lower (-0.476). For trans\* youth, both mental health (-0.294) and social support (-0.599) are lower than among non-LGBT\* youth.

*Table 5.5. Final Model with Bayesian Estimates, Standard Deviations, and Credibility Intervals*

	Non-LGBT*	LGB	Trans*
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	Est.	SD	C.I.	Est.	SD	C.I.	Est.	SD	C.I.
Mental Health by				-	-	-	-	-	-
Nervous	<b>0.803</b>	0.069	[0.674, 0.945]	-	-	-	-	-	-
Hopeless	<b>1.375</b>	0.118	[1.161, 1.624]	-	-	-	-	-	-
Restless	<b>0.646</b>	0.063	[0.530, 0.775]	-	-	-	-	-	-
Depressed	<b>1.326</b>	0.112	[1.125, 1.563]	-	-	-	-	-	-
Everything is Effort	<b>0.489</b>	0.056	[0.384, 0.602]	-	-	-	-	-	-
Worthless	<b>1.333</b>	0.123	[1.116, 1.597]	-	-	-	-	-	-
Overall MH	<b>1.020</b>	0.092	[0.853, 1.213]	-	-	-	-	-	-
Nervous w/ Restless	<b>0.266</b>	0.055	[0.154, 0.369]	<b>0.212</b>	0.098	[0.010, 0.392]	0.35	0.158	[-0.004, 0.607]
Restless w/ Effort	0.155	0.055	[0.046, 0.260]	0.029	0.098	[-0.166, 0.218]	0.084	0.182	[-0.278, 0.424]
Social Support by				-	-	-	-	-	-
Family	<b>0.675</b>	0.103	[0.520, 0.930]	-	-	-	-	-	-
Friends	<b>0.908</b>	0.132	[0.690, 1.243]	-	-	-	-	-	-
Adults	<b>1.823</b>	0.373	[1.035, 2.507]	-	-	-	-	-	-
Adults w/ Friends	-0.171	0.222	[-0.674, 0.201]	-0.411	0.326	[-0.958, 0.216]	-0.287	0.369	[-0.948, 0.391]
Mental Health on				-	-	-	-	-	-
Social Support	<b>0.184</b>	0.060	[0.074, 0.310]	-	-	-	-	-	-
Time	-0.147	0.092	[-0.327, 0.034]	-	-	-	-	-	-
Race	0.050	0.098	[-0.142, 0.243]	-	-	-	-	-	-
Age	-0.023	0.020	[-0.057, 0.023]	-	-	-	-	-	-
Gender	-0.189	0.097	[-0.380, 0.002]	-	-	-	-	-	-
Factor Intercept									
Mental Health	0	-	-	0.072	0.13	[-0.180, 0.332]	-0.294	0.217	[-0.715, 0.140]
Factor Variance									
Mental Health	1.000	-	-	<b>1.022</b>	0.206	[0.688, 1.502]	<b>1.268</b>	0.471	[0.671, 2.486]
Social Support on				-	-	-	-	-	-
Time	<b>-0.218</b>	0.100	[-0.421, -0.028]	-	-	-	-	-	-
Race	0.002	0.106	[-0.202, 0.213]	-	-	-	-	-	-
Age	-0.030	0.018	[-0.058, 0.026]	-	-	-	-	-	-
Gender	<b>-0.337</b>	0.101	[-0.537, -0.140]	-	-	-	-	-	-
Factor Intercept									
Social Support	0	-	-	-0.476	0.373	[-1.200, 0.435]	-0.599	0.417	[-1.412, 0.340]
Factor Variance									
Social Support	1.000	-	-	<b>0.893</b>	0.288	[0.455, 1.575]	<b>1.095</b>	0.571	[0.386, 2.593]

## 5.5 Social Support as Partial Mediator

Next, I analyzed whether or not social support was a significant mediator between time homeless and mental health outcomes. I estimated this model both under WLSMV and Bayes.

Overall, there is no evidence of an interaction between LGBT\* status and the mediating effect of

social support (Wald=5.502; DF=6; p=0.481). However, descriptively we can see that the effect is largest in the non-LGBT\* group and the only significant estimate<sup>1</sup>. Ultimately, I set the mediation effect to be equal across groups because there was no interaction effect between LGBT\* status and the effect. The overall mediation effect of social support is statistically significantly different from zero (est.= -0.038; C.I.=[-0.100, -0.004]). On average, youth who have been homeless longer than six months have worse mental health than youth who have been homeless less than six months. However, the direct effect of time homeless on mental health is not statistically significantly different from zero ([-0.327, 0.034]), indicating that the only time time homeless effects mental health is when it is partially mediated by social support. Table 5.6 shows the final estimates of the indirect and direct effects of time homeless on mental health.

*Table 5.6. Final Fixed Bayesian Decomposition Effects*

Time --> Mental Health	Est.	SD	C.I.
<b>Non-LGBT*</b>			
Specific indirect effects			
Time->SS->MH	<b>-0.038</b>	0.025	[-0.100, -0.004]
Specific direct effect			
Time --> Mental Health	-0.147	0.092	[-0.327, 0.034]
<b>LGB</b>			
Specific indirect effects			
Time->SS->MH	<b>-0.038</b>	0.025	[-0.100, -0.004]
Specific direct effect			
Time --> Mental Health	-0.147	0.092	[-0.327, 0.034]
<b>Trans*</b>			
Specific indirect effects			
Time->SS->MH	<b>-0.038</b>	0.025	[-0.100, -0.004]
Specific direct effect			
Time --> Mental Health	-0.147	0.092	[-0.327, 0.034]

<sup>1</sup> In Bayesian estimation, significance is indicated by zero being outside of the credibility interval (van de Schoot 2014).

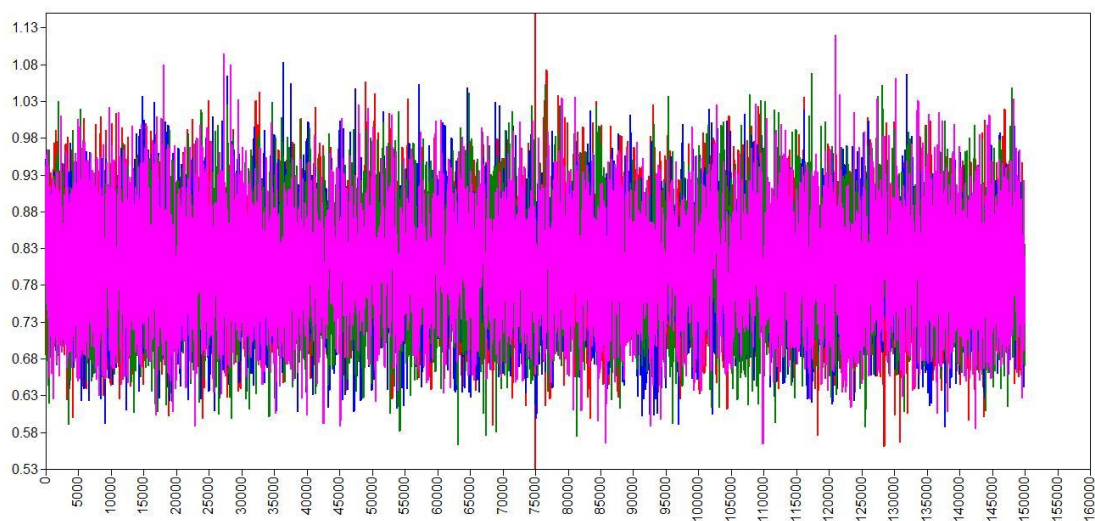


Figure 5.1. Trace Plot with 4 Chains: Mental Health by Q34A

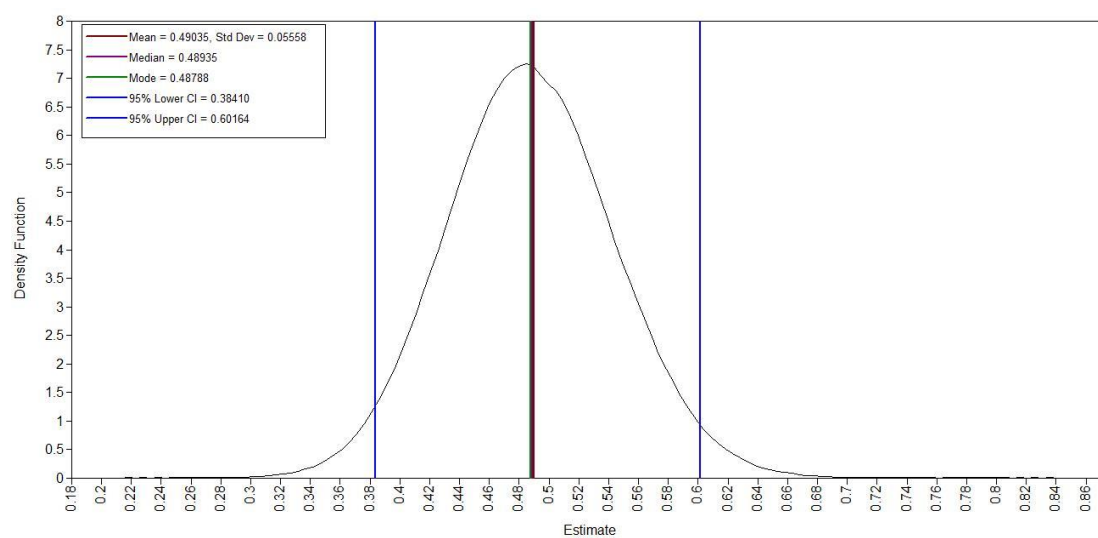


Figure 5.2. Kernel Density Plot: Mental Health by Q34E

## 6 DISCUSSIONS AND LIMITATIONS

Overall time homeless, social support, and mental health do not differ significantly across LGBT\* status. However, descriptively, *Hypothesis I* was partially supported. On average, trans\* youth were homeless longer than both LGB and non-LGBT\* youth. LGB youth were also homeless slightly longer than non-LGBT\* youth. On average, trans\* youth reported having fewer family members they could talk to than both non-LGBT\* and LGB youth, but reported having more adults they could talk to. Trans\* youth also reported having more friends they could talk to than non-LGBT\* youth, but fewer than LGBs. Trans\* youth reported worse mental health across the K6 scale than both LGB and non-LGBT\* youth. However, in some areas like feeling like everything is an effort, being depressed, and overall mental health LGB youth had the same or better mental health scores than non-LGBT\* youth.

*Hypothesis II* was not supported among homeless youth. Time homeless did not have a statistically significant direct effect on the mental health status of homeless youth. There was some evidence that on average mental health is better for non-LGBT\* and LGB youth compared to trans\* youth, but there was no evidence that LGB youth had worse mental health than non-LGBT\* youth. In fact, the contrary was true regarding average mental health. LGB youth were found to have slightly better mental health scores on average than non-LGBT\* youth when controlling for social support. This was not statistically significant, but the descriptive analysis of this finding is interesting because it is contrary to most literature on homeless LGBT\* mental health outcomes. However, because my sample size for the trans\* and LGB group was small (N=41) compared to the non-LGBT group, these relationships should be analyzed using a larger and more equitable sample size across all groups.

While time homeless does not have a direct, statistically significant impact on mental health, time homeless does impact mental health via its effect on social support. *Hypothesis III* was supported, though it is not a linear relationship. Instead of using time homeless as an ordinal variable, I dichotomized it into youth who had been homeless longer than six months and youth who had been homeless less than six months. More than six months homeless was the “tipping point” for when living on the streets impacts social support and mental health. Evidence suggests that social support partially mediates the relationship between time homeless and mental health. Youth who have been homeless more than six months have worse mental health than youth who have been homeless less than six months when controlling for social support. Additionally, youth who have been homeless longer than six months have lower social support than those who have been homeless less than six months. This is consistent with the literature that the longer a youth is homeless, the fewer social supports they will have.

*Hypothesis IV* indicated that intersectional identities would moderate the effects of time homeless and social support on mental health. However, age and race did not account for any differential effects among the homeless youth. In part, this is likely due to the fact that nearly 70% of the sample identified as Black. Perhaps with a more diverse sample, the results might be different. There may not be enough statistical power to detect racial group differences in effects. Age may not have played a particularly important role in social support or mental health for this population. Age may be a significant factor for older homeless adults or as homeless youth transition into being homeless adults. However, sex assigned at birth did moderate the effect of social support. Individuals who were assigned female at birth, regardless of LGBT\* status, on average had fewer social supports than individuals assigned male at birth. There is some evidence that AFAB LGB and non-LGBT\* individuals have higher levels of social support than

AFAB trans\* individuals. However, this difference may be due in part to sample size and not to any actual differences in the populations. More research on larger trans\* samples is needed in order to be conclusive.

Overall, social supports play an integral role in mental health outcomes for homeless youth, regardless of LGBT\* status. Youth who have more social supports have better mental health. This is especially true for youth who have been homeless longer than six months compared to youth who have been homeless less than six months. Once a youth has been on the streets at least six months, social supports help youth maintain or improve their mental health. However, it's also important to understand that once a youth has been homeless for more than six months, evidence suggests they have fewer social supports than youth who have been homeless less than six months. Individuals who were assigned female at birth also have fewer social supports than their male counterparts.

These findings have an important impact of social support theory, specifically when studying structural and functional social support. Results indicate that structural support is integral in at least partially mediating the negative effects of homelessness on mental health outcomes among youth. Future studies of homeless youth should aim to examine not only how structural support functions, but gain a deeper understanding of how these youths' social support systems function in a more detailed way. A more comprehensive definition and conceptualization of social support that includes measures for functional support may increase awareness and understanding for how social support mitigates negative mental health outcomes among homeless youth.

While other findings were not statistically significant, descriptively they suggest that there are some differences between LGB, non-LGBT\*, and trans\* youth. These differences



between the groups indicate a need to replicate this analysis with a larger, more equitably balanced sample. Because the non-LGBT\* group had nearly four times the cases than the LGB group, and ten times as many cases as the trans\* group, these non-significant findings may indicate something more substantive if the groups had similar sample sizes. For example, LGB youth were found to have better mental health than non-LGBT\* youth (see Table 1), suggesting a divergence from the mental health literature on LGBT\* populations. LGB youth may have better mental health than non-LGBT\* youth for a variety of reasons. One reason may be that being homeless is an equalizer among non-LGBT\* and LGB youth. That is, while it is true that there are differences in housed populations regarding their levels of mental health, being homeless may compensate for those differences and overshadow other mechanisms that influence mental health in these two populations.

In order to help homeless youth improve their mental health, homeless service providers and policy makers should pay special attention to the strength and number of social support systems that youth have and implement intervention policies aimed at helping youth, especially those assigned female at birth and those homeless longer than six months, maintain or build new support systems.

It was my goal with this thesis to add to the literature of intersectionality through quantitative analysis. While my results indicate that LGBT\* status, age, and race do not significantly influence time homeless, social support, or mental health, sex assigned at birth does. By intentionally investigating whether LGBT\* status, age, race, and sex assigned at birth affect mental health and social support outcomes, I actively employed an intersectional framework. Most models that study the relationship between mental health and social support do not use LGBT\* status as a basis for a comparative multi-group model, but rather as a covariate.

By using LGBT\* status as a grouping variable, I was able to empirically determine if LGBT\* youth had any different outcomes on social support and mental health than non-LGBT\* youth.

While I have intended to be as thorough and definitive as possible in my theory, model, and analysis, there are limitations to the current publication. One such limitation is the application of the theory of intersectionality. For a truly intersectional analysis in a multi-group SEM framework, I would need to have groups delineated by not only LGB, T\*, and non-LGBT\* status, but also by race and sex assigned at birth. However, while my current sample size is relatively large and diverse, it does not lend itself to further splitting. Doing so would disavow any statistical power I may have in small groups such as the trans\* group. Therefore, future research should aim to target trans\* individuals and other underrepresented identities in order to fully utilize intersectionality in a multiple group SEM framework.

Another limitation deals with the issue of endogeneity with regard to the variables Time Homeless and Mental Health. My model assumes that the longer a person is homeless the worse their mental health will be. However, it is possible and plausible that the relationship is inverse such that the poorer a person's mental health is, the longer they will stay homeless. Future research should include longitudinal data that follows the trajectory of a homeless youth into adulthood to determine in which direction the relationship functions. It could also be a reciprocal relationship.

Finally, while this thesis focuses on psychological distress as the measure for mental health, the extant literature indicates that many other factors contribute to mental health outcomes in LGBT\* homeless youth. Future areas of research should focus on dependence on substances such as alcohol and drugs, suicidal ideation, and tobacco use as these have been

shown to have impacts on the mental health of LGBT\* homeless youth (Berg et al. 2008; Kelly et al. 2015; Martino et al. 2011).

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## APPENDICES

### Questions Utilized from Survey

Duration of Homelessness: How long have you been homeless this time (that is, continuously homeless since you last permanent housing)? How old were you the first time you became homeless? Including this time, how many separate times have you been homeless in the past three years?

Social Support: Do you have (and how many) family members, friends your age, or adult friends you can talk to about important matters or turn to for help when you have a problem? Are you in a serious relationship or dating someone right now? Do you have a “chosen family,” “street family,” “squad,” “crew,” or other small group of people you consider to be your alternative family?

Mental Health: During the past 30 days, how often did you feel: Hopeless? Nervous? Restless or fidgety? So depressed that nothing could cheer you up? That everything was an effort? Worthless? Altogether how much did these feeling interfere with your life or activities?

Race: Do you consider yourself to be Hispanic or Latino? What race do you consider yourself?

Age: How old are you?

Sex/Gender/Sexuality: What sex were you assigned at birth? Do you consider yourself: man/male, female/woman, part-time in both, genderqueer, transgender, intersex, gender nonconforming, something else? Which label best describes your sexual orientation?